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The Influence of Accuracy as a Function of Leader's Bias: The Role of Trustworthiness in the Psychology of Procedural Justice

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The present research examined the combined effect of accuracy of procedures and leader's bias on fairness judgments and the experience of positive emotions. The results of two studies showed that the strongest positive effects on both types of reactions were found when procedures were accurate and the leader was unbiased. In addition, accuracy of procedures only revealed an impact when the leader was perceived as unbiased rather than biased. Moreover, this interactive effect was found to be mediated, at least partly, by perceptions of trustworthiness. These findings show that more research is needed on examining different types of procedural fairness, both as single and combined predictors of people's reactions.

Keywords: procedural justice; bias; accuracy; trustworthiness

Justice has been argued to have a profound effect on people's judgments and emotions across a variety of social situations and interactions. In essence, since the early writings of Plato and Socrates, researchers have continuously been able to show how people use fairness information to direct their actions, to assess how they feel, to evaluate outcomes, and so forth. Of course, justice has many forms and a common approach has been to classify two broad types of justice, that is, distributive and procedural justice. Distributive justice refers to how fair people evaluate the outcomes they receive (Deutsch, 1985), whereas procedural justice refers to the procedures that are used to arrive at an outcome (Tyler, 1988). Motivated by Lind and Tyler's (1988, p. 1) argument that fairness judgments are influenced more strongly by procedures than by outcomes, the past 15 years or so, researchers have started to devote considerable attention to understand the psychology of procedural justice in greater detail.

The procedures that authorities use may come in different forms and criteria. Indeed, Leventhal (1980) suggested six procedural justice rules that people use to evaluate the fairness of allocation decisions: consistency, bias suppression, accuracy, correctability, representativeness, and ethicality. These different types of procedural rules have indeed been partly incorporated into justice theories such as the group value model (Lind & Tyler, 1988) (referring to voice, ethicality, and neutrality) and recent developments of justice scales (see Colquitt, 2001). However, it is fair to note that most of this research has been correlational, and as such relatively little causal or experimental evidence exists on how all these different procedures affect people's reactions (see Van den Bos, 2001a, for the claim that more experimental justice research is required).

In fact, to date, most experimental research has focused mainly on understanding the psychology of voice (i.e., the possibility to provide input or not in decision-making procedures) (Folger, 1977), and as a consequence, experimental tests of the other procedural justice elements have been relatively limited. Indeed, Brockner, Ackerman, and Fairchild (2001) recently argued, "We know much more about the effects of, and moderating influences on, process control and decision

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control, than we do about Leventhal et al.'s (1980) procedural elements of consistency, correctability and accuracy. Future efforts need to redress this imbalance" (p. 205). Thus, justice research also should experimentally examine the effect of other procedural justice rules on a variety of human reactions.

In addition to this shortcoming, however, it is maybe even more important to note that hardly any research has examined how the different procedural rules may interact in determining people's reactions. In complex situations such as work settings, negotiations, and inter-group relations, authorities make use of a range of procedures and do not stick to only one specific procedural rule (Barrett-Howard & Tyler, 1986). In fact, it may well be that using one procedure may overrule the effectiveness of another procedure, or it may be the case that different procedures enhance each other's effectiveness.

For these reasons, it is necessary to examine how different procedural rules interact in influencing people's reactions. The purpose of the present research is two-fold. First, I wish to experimentally examine the validity and effectiveness of other procedural rules than the widely used manipulation of voice (cf. Brockner et al., 2001). Second, because it is important and necessary to examine how procedures interact, I will examine the combined effects of two different procedural rules. The procedures that will be addressed in the present research are accuracy and leader's bias.

Procedural Justice: Accuracy and Leader's Bias

The construct of procedural justice has received considerable attention throughout the past two decades, but as said before, the focus on the different procedural rules has remained largely limited to the concept of voice. In fact, the pioneering work on "process-control-effect" by Thibaut and Walker (1975) and the "voice-effect" by Folger (1977) has, throughout the years, resulted in an impressive number of experiments in which procedural fairness was manipulated by allowing people voice or not (see, e.g., Brockner et al., 1998; Lind, Kanfer, & Earley, 1990; Van den Bos, 1999), and it can be concluded that voice is now the most accepted and most frequently used manipulation of procedural fairness (e.g., Brockner et al., 1998; Van den Bos, Vermunt, & Wilke, 1996). In essence, these studies show that voice, relative to no voice, leads to increased procedural fairness perceptions (e.g., McFarlin & Sweeney, 1996), better decision making (e.g., Lind et al., 1990), effective goal setting (e.g., Early & Lind, 1987), and positive outcome fairness judgments (e.g., Van den Bos, Wilke, Lind, & Vermunt, 1998).

However, I wish to argue that it is time to experimentally examine some of the other procedural rules as identified by Leventhal (1980), both separately and in tan-

dem. One procedure that is considered to be of major importance within groups and organizations is accuracy. Indeed, when recruiting prospective group members or employees, accurate procedures are a necessary tool to promote the procedural fairness of the recruitment questionnaires and tests (e.g., Gilliland, 1994). In addition, accuracy is also one of the alternative procedures that has been the focus of some experimental social justice studies, although the number of these kind of studies has been limited (see, e.g., Van den Bos, 2001b; Van den Bos, Vermunt, & Wilke, 1997; Vermunt, Wit, Van den Bos, & Lind, 1996). Accuracy refers to the extent to which authorities base their decisions on all the information they receive or only on part of it. Indeed, in experimental studies using this type of manipulation, participants are usually informed that their performance on a task or an assessment will be checked either in an accurate manner (i.e., all items will be evaluated to reach a decision) or inaccurate manner (i.e., only some items will be evaluated to reach a decision). Moreover, using these techniques, studies have shown that manipulations of procedural accuracy affect the same range of people's reactions as do manipulations of voice, adding validity to the perspective of accuracy as an important procedural rule (cf. Van den Bos et al., 1997).

Furthermore, a key impediment to accuracy is considered to be the extent to which an authority is biased (Tyler & Lind, 1992), or the procedure that Leventhal referred to as bias suppression. Bias suppression refers to the event that authorities are not prejudiced and that they act on the basis of a complete and open assessment of the facts, accentuating its relationship to accurate judgments. This concept of bias also figures prominently in assumptions made by the relational model of authority (Tyler, 1994; Tyler & Lind, 1992). According to this model, procedural justice influences a range of variables such as self-esteem, emotions, and cooperation because it communicates important relational concerns. One such relational concern is referred to as neutrality or the lack of bias in decision-making procedures. Thus, following these justice theories, bias is supposed to constitute an important aspect of procedural rules. For example, within courtrooms, judges are needed that suppress biases to remain neutral toward attorneys and their clients. Indeed, recent research by Clay-Warner (2001) demonstrated the importance of procedural justice in detecting biases toward female attorneys (by both female and male judges) in the courtroom. Furthermore, Lind, Tyler, and Huo (1997) also demonstrated that neutrality or bias suppression is the most important determinant of shaping procedural fairness in dyadic conflict resolutions.

To date, little experimental research exists examining accuracy and bias as important procedural rules and, as

such, the applicability of the main justice findings remains mainly limited to the voice manipulation. In addition, however, what is even more important is to examine how the different operationalizations of procedural justice may interact in determining important reactions toward (in)justice such as fairness evaluations and emotions. Indeed, more than two decades ago, Leventhal (1980) already proposed that procedural justice was a function of the extent to which a number of procedural rules were satisfied or violated. In other words, to more fully understand the psychology of procedural justice, we need to look at how people react toward authorities using a range of different procedures. Because managers and authorities make use of a variety of decision-making procedures, it is proposed in the present research that the effects of accuracy and bias will be strongest in conjunction rather than on their own (Hypothesis 1). As mentioned earlier, accuracy and bias are considered to be key rules for procedural justice to emerge (Leventhal, 1980), and, therefore, the combination of the two identified procedural rules should have stronger effects than the simple impact of each of these components (see also Skarlicki & Folger, 1997, for correlational evidence that a combination of different dimensions of justice may reveal stronger effects).

To elaborate further, before people engage in selection assessments or evaluations of all kind, they often have a certain image about the authority. More precise, due to rumors, gossip, or other types of information, people within groups and organizations often have an idea about whether the authority is biased (e.g., Kurlan & Pelled, 2000). Thus, because perceptions of authorities' bias often precede the action that those authorities undertake (cf. Van den Bos et al., 1997), some other predictions can be made as well; that is, if people are aware that the authority is biased or nonbiased, to what extent will this influence the effect of accuracy? In other words, when can we expect to have the accuracy manipulation to reveal the strongest effect (i.e., accuracy effect)?

It is likely that in this process, trust may provide us with an explanation. In general, trust can be defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the trustor" (Mayer, Davis, & Schoorman, 1995, p. 712). Thus, in the present context, trust refers to the belief that the authority will not exploit us and will make good decisions in the future. To reinforce this belief, and as such to install trust, people will therefore draw inferences from information that is available (see Van den Bos, Wilke, & Lind, 1998), in this case, the extent to which the authority is biased or not. This assumption aligns well with the relational model of authority (Tyler, 1994; Tyler & Lind, 1992), which assumes that people

care about the benevolence of the authority and will therefore assign much weight to how neutral the authority acts. In fact, Tyler and DeGoe (1996) explicitly note that "trustworthiness is primarily determined by neutral and unbiased decision making" (p. 342). Such degree of trust elicited by the procedural element of bias will then serve as the basis for people to base their judgments and other types of reactions on (e.g., Brockner et al., 2001).

Following from this, it may be the case that biased authorities are expected to have bad intentions and therefore are not perceived as benevolent. As a result, due to this negative image (i.e., in terms of distrust), the subsequent actions or decisions of a biased authority will not be taken into account anymore because it is clear that the relationship with the authority is negative. In contrast, if people perceive the authority as unbiased, they will not distrust the authority and, following the relational model of authority, will be motivated to use the subsequent actions and procedures of the authority to make further inferences about the quality of their relationship with this authority (Tyler, 1999, 2001). Taken together, the above leads me to predict that accuracy will not influence people's reactions if they know that the authority is biased. In contrast, if the authority is not biased, accuracy will influence people's reactions (Hypothesis 2). Furthermore, I predict that this interaction effect will be mediated by perceptions of trustworthiness (Hypothesis 3). Indeed, because without evidence of authorities' trustworthiness other procedural justice elements such as accuracy will become less important or not important at all, it follows that this process of trust in the authority determines whether we put weight on subsequent procedural dimensions enacted by the authority to influence our judgments and other types of reactions.

EXPERIMENT 1

The first study was a scenario experiment set out to provide a first test of my hypotheses. Accuracy was manipulated by using an established manipulation of Vermunt et al. (1996; see also Van den Bos, 2001b). In this manipulation, the authority makes a decision on how well or how poor the other performed by either evaluating all the items that the other person filled out (i.e., accurate) or by only evaluating one item (i.e., inaccurate). This manipulation has been used successfully and has revealed effects similar to the procedure of voice on justice-related variables such as fairness judgments, self-esteem, and affect. Authority's bias was manipulated by describing that—based on participant's own experiences—the authority was seen as a biased or unbiased person.

The main dependent variables were procedural fairness judgments, perceptions of trustworthiness, and

emotional reactions. Whereas judgments of fairness and perceptions of trustworthiness are quite common in justice research, assessments of emotions have largely been neglected. Indeed, Weiss, Suckow, and Cropanzano (1999) even argue that "the relative lack of empirical research assessing emotional reactions to conditions of unfairness is a serious omission" (p. 786, see also Krehbiel & Cropanzano, 2000). Therefore, because justice can be seen as an affective event, it is necessary and important to assess how people react in an emotional manner toward procedural justice (Tyler & Smith, 1998).

To date, most justice studies including emotional reactions have used negative affect measures because injustice is believed to elicit feelings of anger and resentment (Folger & Cropanzano, 1998). Indeed, Mikula, Scherer, and Athenstaedt (1998), for example, state that in case of justice studies, "in about 50% of cases a member of the anger family is likely to be elicited" (p. 781). However, they go on to notice that "objectively similar situations can produce widely different emotions" (p. 781), suggesting that a wide range of emotions differing in specificity and valence needs to be measured.

Therefore, in the present research, I will follow such an approach and rather than assessing negative emotions I will assess participants' positive emotional reactions. Contrary to distributive justice research (see, e.g., Austin & Walster, 1974; Sprecher, 1986), prior procedural justice research has revealed surprisingly little evidence that procedures also influence people's positive emotional reactions; therefore, more research on the relationship between procedural fairness and positive emotions is required. Moreover, because the literature on emotions has convincingly argued that in addition to negative emotions also positive emotions need to be assessed to fully understand the effect of social cues on emotions (Watson, Clark, & Tellegen, 1988), Experiment 1 will use positive emotions as a dependent measure (see also Van den Bos & Spruijt, 2002, for a recent study assessing this type of emotions).

Method

Participants and design. Seventy-one undergraduate students at Maastricht University participated voluntarily in this first study. They were each paid 2 euros (approximately U.S.\$2) and were randomly allocated to a 2 (procedural bias: biased vs. unbiased) \times 2 (accuracy: accurate vs. nonaccurate) between-subjects factorial design.

Experimental procedure. Participants were approached by a female research assistant at several locations within the psychology department and were asked whether they were willing to fill out a questionnaire containing the scenario study. The total study lasted for 15 min.

In the scenario, participants were asked to imagine the following situation:

For some time now, you have worked for a company called MicroMac that specializes in buying and selling computer equipment. After a while, you participate in an internal selection procedure to acquire a higher position within this company. Therefore, you will have to follow a specific procedure. More specifically, your supervisor will use a procedure consisting of nine different parts: an intelligence test, a personality test, a mathematical test, a test measuring your technical skills, a test assessing calculation skills, a language test, a test measuring your demographical skills, a motivation test, and finally, an interview with your supervisor. Due to your work specifics, you need to collaborate quite often with your supervisor. After this selection procedure, your supervisor will decide whether you will be promoted.

This was followed by the manipulation of procedural bias. In the biased procedure condition, participants read the following:

Following conversations with others and your own daily observations, you know that your supervisor is a biased person. He will often make decisions that are solely in favor of his own interests and not in favor of the interest of others. For example, you know that he may promote someone just because the company wishes to promote other people.

In the unbiased procedure condition, participants read the following:

Following conversations with others and your own daily observations, you know that your supervisor is an unbiased person. He will never make decisions that are favoring solely his own interests, although not necessarily favoring those of others. For example, you know that he will never refuse to promote someone just because the company wishes to promote someone else.

Then, the accuracy manipulation was introduced (which was validated by and taken from Vermunt et al., 1996). In the accurate condition, participants read the following: "A week after you complete all the tests, you are told that your supervisor has graded all the nine parts of the selection procedure (and based on this will make a decision)." In the inaccurate condition, participants read, "A week after you did all the tests, you are told that your supervisor has only graded one of the nine parts of the selection procedure (and based on this will make a decision)."

Thereafter, the dependent measures of this study were solicited. To measure the trustworthiness of the supervisor, participants were asked to what extent they

TABLE 1: Means and Standard Deviations of Trustworthiness, Procedural Fairness, and Positive Emotions as a Function of Procedural Bias and Accuracy (Experiment 1)

Dependent Variables	Accuracy	Procedural Bias	
		Biased	Unbiased
Trustworthiness	Accurate	2.87 _b (1.40)	5.64 _c (0.93)
	Inaccurate	2.21 _a (1.18)	3.47 _b (1.34)
Procedural fairness	Accurate	3.20 _c (1.44)	5.54 _d (0.97)
	Inaccurate	1.52 _a (0.85)	2.35 _b (0.99)
Positive emotions	Accurate	3.03 _b (1.29)	5.26 _c (1.20)
	Inaccurate	1.73 _a (0.88)	2.73 _b (1.12)

NOTE: Numbers are means on 7-point scales, with higher values indicating higher ratings of fairness, positive emotions, and trustworthiness; numbers within parentheses are standard deviations. Means with a different subscript differ significantly at $p < .05$.

considered their supervisor to be trustworthy. Procedural fairness judgments were assessed by means of three items: To what extent “do you consider your supervisor to be honest,” “does your supervisor act in a fair way,” and “do you think your supervisor uses this selection procedure in a just way.” These three items were combined to form one average procedural fairness score (Cronbach’s $\alpha = .94$). Finally, to assess the effect of our manipulations on emotions, participants were asked how satisfied and happy they would be about the way they were treated by their supervisor ($r = .83$, $p < .001$). All questions were answered on 7-point scales (ranging from *not at all* = 1 to *very much so* = 7).

Results

Trustworthiness. A 2×2 ANOVA on the average procedural fairness score revealed, first, a significant main effect of procedural bias, $F(1, 67) = 47.42$, $p < .001$, $\eta^2 = .41$: Participants in the unbiased condition evaluated the supervisor as more trustworthy than those in the biased condition ($M_s = 4.56$ vs. 2.54 , $SD_s = 1.59$ and 1.31 , respectively). Also, a significant main effect for accuracy was found, $F(1, 67) = 23.45$, $p < .001$, $\eta^2 = .26$: An accurate supervisor was evaluated as more trustworthy than an inaccurate supervisor ($M_s = 4.26$ vs. 2.84 , $SD_s = 1.82$ and 1.40 , respectively). Finally, a significant interaction effect emerged, $F(1, 67) = 6.63$, $p < .05$, $\eta^2 = .09$ (see Table 1).

In line with Hypothesis 1, the means reported in Table 1 show that perceptions of trustworthiness were indeed highest in the unbiased/high-accuracy condition and this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy

effect was significant in the unbiased condition, $F(1, 69) = 14.67$, $p < .001$, $\eta^2 = .17$, but not in the biased condition, $F(1, 69) = 1.98$, $p < .17$, $\eta^2 = .02$. Furthermore, the effect of procedural bias was significantly stronger within the accurate conditions, $F(1, 69) = 29.69$, $p < .001$, $\eta^2 = .30$, than within the inaccurate conditions, $F(1, 69) = 5.16$, $p < .05$, $\eta^2 = .07$.

Procedural fairness judgments. A 2×2 ANOVA on the average procedural fairness score revealed, first, a significant main effect of procedural bias, $F(1, 67) = 38.02$, $p < .001$, $\eta^2 = .36$: Participants in the biased condition evaluated the leader as less fair than those in the unbiased condition ($M_s = 2.36$ vs. 3.95 , $SD_s = 1.42$ and 1.88 , respectively). Also, a significant main effect for accuracy was found, $F(1, 67) = 90.38$, $p < .001$, $\eta^2 = .57$: An accurate supervisor was evaluated as much fairer than an inaccurate supervisor ($M_s = 4.37$ vs. 1.93 , $SD_s = 1.69$ and 1.00 , respectively). Finally, a significant interaction effect emerged, $F(1, 67) = 8.72$, $p < .005$, $\eta^2 = .11$ (see Table 1).

In line with Hypothesis 1, the means reported in Table 1 show that perceptions of procedural fairness were indeed highest in the unbiased/high-accuracy condition, and this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy effect was significant more strongly in the unbiased condition, $F(1, 69) = 39.65$, $p < .001$, $\eta^2 = .36$, than in the biased condition, $F(1, 69) = 9.45$, $p < .005$, $\eta^2 = .12$. Furthermore, the effect of procedural bias was significant within the accurate conditions, $F(1, 69) = 17.58$, $p < .001$, $\eta^2 = .20$, but not within the inaccurate conditions, $F(1, 69) = 1.93$, $p = .17$, $\eta^2 = .02$.

Positive emotions. A 2×2 ANOVA on the average procedural fairness score revealed, first, a significant main effect of procedural bias, $F(1, 67) = 36.30$, $p < .001$, $\eta^2 = .35$: Participants in the unbiased condition reported higher positive emotions than did those in the biased condition ($M_s = 4.00$ vs. 2.38 , $SD_s = 1.71$ and 1.25 , respectively). Also, a significant main effect for accuracy was found, $F(1, 67) = 50.72$, $p < .001$, $\eta^2 = .43$: An accurate supervisor elicited higher positive emotions than an inaccurate supervisor ($M_s = 4.14$ vs. 2.23 , $SD_s = 1.67$ and 1.11 , respectively). Finally, a significant interaction effect emerged, $F(1, 67) = 5.28$, $p < .05$, $\eta^2 = .07$ (see Table 1).

In line with Hypothesis 1, the means reported in Table 1 show that the experience of positive emotions was indeed highest in the unbiased/high-accuracy condition and that this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy effect was significantly stronger within the unbiased conditions, $F(1, 69) = 24.65$, $p < .001$, $\eta^2 = .26$, than in the biased conditions, $F(1, 69) = 6.65$, $p < .05$, $\eta^2 = .08$. Fur-

thermore, the procedural bias effect was significant within the accurate conditions, $F(1, 69) = 18.84, p < .001, \eta^2 = .21$, and marginally significant within the inaccurate conditions, $F(1, 69) = 3.39, p = .07, \eta^2 = .04$.

Mediational analysis. To test whether perceptions of trustworthiness are indeed the process via which the interaction between procedural bias and accuracy exerts influence on procedural fairness judgments and positive emotions (Hypothesis 3), I conducted a series of regression analyses (see Baron & Kenny, 1986). To test for mediation, four steps need to be taken. First, the effect of the independent variable on the dependent variable has to be significant. Second, the proposed mediating variable has to influence significantly the dependent variable. Third, the independent variable has to influence significantly the mediating variable. Fourth, the effect of the independent variable on the dependent variable has to be reduced when accounting for the mediating variable.

Procedural fairness judgments. A first regression analysis on procedural fairness judgments revealed significant main effects of accuracy, $\beta = -.66, p < .001$, and bias, $\beta = .41, p < .001$, and a significant interaction effect, $\beta = -.90, p < .005$, as such paralleling the ANOVA results. A second regression analysis revealed that trustworthiness significantly influenced procedural fairness judgments, $\beta = .80, p < .001$. A third regression analysis on the trustworthiness score revealed significant main effects of accuracy, $\beta = -.40, p < .001$, and bias, $\beta = .56, p < .001$, and a significant interaction effect, $\beta = -.94, p < .001$, also paralleling the ANOVA results. Finally, a regression analysis including trustworthiness as a covariate revealed that the interaction between accuracy and bias disappeared, $\beta = -.40, p = .11$. A calculation of the Sobel test showed that this reduction in beta weight was significant, $z = -2.38, p < .05$.

Positive emotions. A first regression analysis on positive emotions revealed significant main effects of accuracy, $\beta = -.56, p < .001$, and bias, $\beta = .46, p < .001$, and a significant interaction effect, $\beta = -.80, p < .005$, also paralleling the ANOVA results. A second regression analysis revealed that trustworthiness significantly influenced positive emotions, $\beta = .82, p < .001$. Finally, a regression analysis including trustworthiness as a covariate revealed that the interaction between accuracy and bias disappeared, $\beta = -.23, p = .42$. A calculation of the Sobel test showed that this reduction in beta weight was significant, $z = -2.40, p < .05$.

EXPERIMENT 2

As expected, the results of Experiment 1 supported the predictions. The strongest effects were obtained when the authority was unbiased and accurate. Furthermore, accuracy only influenced people's reactions when

the authority was perceived as unbiased. Finally, this effect was mediated by perceptions of trustworthiness. As such, the present findings contribute significantly to the validity of these two procedural rules and also suggest that both are necessary to obtain the best results. However, before drawing strong conclusions, we need to replicate these findings.

Indeed, Experiment 1 made use of a scenario in which participants were asked to imagine a relevant work situation. One might wonder whether similar results will be obtained when participants are involved in an actual working task where an authority will evaluate performances. Therefore, in Experiment 2, an experimental laboratory study was conducted in which participants were placed in a real interaction setting. Accuracy was again manipulated by using Vermunt et al.'s (1996) operationalization. Procedural bias was manipulated by creating a belief among participants that the authority would be prejudiced or not when evaluating the performance of each participant. This perception of prejudice was based on the scores of each participant on a test that would measure the skills required for the upcoming performance task.

Method

Participants and design. One hundred and four undergraduate students participated voluntarily in the present study and were each paid 10 euros (approximately U.S.\$10). They were randomly assigned to a 2 (procedural bias: biased vs. unbiased) \times 2 (accuracy: accurate vs. inaccurate) between-subjects factorial design.

Experimental procedure. After arriving at the laboratory, participants were placed in an experimental cubicle containing a table, a chair, and a computer. Participants were led to believe that all interactions and communications would take place via the computer (which was believed to be connected to a general server). After participating in an unrelated task, participants were informed that they would have to do a task in which they could earn additional money that, in turn, could be used in a subsequent negotiation study. Before starting with this task, however, participants were told that they first would have to fill out a questionnaire. It was said that this questionnaire was developed to assess several qualities that are important with respect to the task that the participants would have to do later on in the study. Participants were further told that the score on this questionnaire provides a good impression about how people would perform on tasks such as the one that the participants would have to do. Thus, participants first had to fill out the questionnaire and thereafter the task would be explained. After this, participants filled out the questionnaire.

Then, the task was explained. Each participant would receive four word tasks that each of them had to solve individually. The task was introduced as an analogical reasoning task. For each of the four trials, participants were first presented three words and were asked to think which word these three words would have in common; that is, which word would be related to the three other words? Combining these four words should then result in a short sentence.

After explaining this task, the procedural bias manipulation was introduced. In the biased condition, participants were sent an e-mail saying that the experimenter would assign much weight to the participant's score on the questionnaire. It was the experimenter's belief that people's scores on the questionnaire would already indicate their performance on the subsequent task (and thus not much attention had to be devoted to the actual performance). The experimenter clearly emphasized that he would make use of the test scores to evaluate and analyze the performance of each participant on the word task, even if this would make him seem biased by the questionnaire scores. Thus, participants were led to believe that a bad score would lead the experimenter to think in advance that they would not do well on the task. In the unbiased condition, participants were sent an e-mail saying that the experimenter would not assign too much weight to the participant's score on the questionnaire. It was the experimenter's belief that he first had to evaluate the performance of the participant on the task and then, if necessary, he could use the questionnaire scores as well. The experimenter clearly said that mainly using the questionnaire scores to evaluate the performances would make him too biased. Thus, participants were led to believe that a bad score would not lead the experimenter to take for granted that they would not do well on the task.

After reading this e-mail, participants started with the four word tasks. After finishing the task, the accuracy manipulation was introduced. In the accurate procedure, the experimenter said that before making a final decision, he would check all the tasks that the participant fulfilled; that is, all four tasks would be evaluated. In the inaccurate procedure, the experimenter said that before making a final decision, he would not check all the tasks that the participant fulfilled; that is, he would only evaluate one out of four tasks.

Then, the dependent measures of Study 2 were solicited. All questions were answered on 7-point scales (ranging from *not at all* = 1 to *very much so* = 7). To check the effectiveness of the procedural bias manipulation, participants were asked two questions: (a) "To what extent do you think the experimenter is biased?" and (b) "To what extent will the experimenter base his evaluations on your questionnaire scores (rather than on your

actual performance)?" Furthermore, to check for the effectiveness of the accuracy manipulation, participants were asked to what extent they considered the experimenter to be accurate in his evaluations. Then, participants' perceptions of trustworthiness were assessed by asking them to what extent they considered "the experimenter to be trustworthy" and "the experimenter to show reliable behavior" ($r = .71, p < .001$). Thereafter, perceptions of fairness were assessed by asking them to what extent "they perceived the experimenter to be just," "they perceived the experimenter to be fair," and "the procedures and the attitude of the experimenter were fair" (Cronbach's $\alpha = .89$). Finally, participants' emotional reactions were measured by asking them how satisfied and angry (reverse scored) they were ($r = .29, p < .005$). Finally, participants were debriefed, paid, thanked, and dismissed.

Results

Manipulation check. A 2×2 ANOVA on the accuracy question revealed that participants in the accurate procedure condition perceived the experimenter to be more accurate in his evaluation than were those in the inaccurate condition ($M_s = 4.75$ vs. 3.48 , $SD_s = 1.23$ and 1.88 , respectively), $F(1, 100) = 21.04, p < .001, \eta^2 = .17$. No main effect of procedural bias, $F(1, 100) < 1, ns$, or an interaction, $F(1, 100) < 1, ns$, was found.

A 2×2 ANOVA on the first bias check question revealed that participants in the biased procedure condition perceived the experimenter to be more biased than those in the unbiased condition ($M_s = 4.82$ vs. 3.88 , $SD_s = 1.22$ and 1.54 , respectively), $F(1, 100) = 11.79, p = .001, \eta^2 = .10$. No main effect of accuracy, $F(1, 100) < 1, ns$, or an interaction, $F(1, 100) < 1, ns$, was found.

A 2×2 ANOVA on the second bias question revealed that participants in the biased procedure condition thought to a greater extent that the experimenter would evaluate each person more on the basis of his or her questionnaire score rather than on his or her actual performance than did those in the unbiased condition ($M_s = 4.50$ vs. 3.57 , $SD_s = 1.23$ and 1.47 , respectively), $F(1, 100) = 11.80, p = .001, \eta^2 = .10$. No main effect of accuracy, $F(1, 100) < 1, ns$, or an interaction, $F(1, 100) < 1, ns$, was found. These analyses show that the manipulations were successful.

Trustworthiness. A 2×2 ANOVA on the average trustworthiness score revealed, first, a significant main effect of accuracy, $F(1, 100) = 12.02, p = .001, \eta^2 = .10$: An accurate supervisor was evaluated as more trustworthy than an inaccurate supervisor ($M_s = 4.33$ vs. 3.50 , $SD_s = 1.32$ and 1.16 , respectively). Also, a marginal significant interaction effect emerged, $F(1, 100) = 3.21, p < .08, \eta^2 = .03$ (see Table 2).

TABLE 2: Means and Standard Deviations of Procedural Fairness, Positive Emotions, and Trustworthiness as a Function of Procedural Bias and Accuracy (Experiment 2)

Dependent Variables	Accuracy	Procedural Bias	
		Biased	Unbiased
Procedural fairness	Accurate	3.89 _a (1.49)	4.88 _b (0.95)
	Inaccurate	3.53 _a (1.06)	3.48 _a (1.15)
Positive emotions	Accurate	3.94 _a (1.24)	4.84 _b (0.92)
	Inaccurate	4.01 _a (1.04)	3.84 _a (1.21)
Trustworthiness	Accurate	3.96 _a (1.42)	4.71 _b (1.12)
	Inaccurate	3.55 _a (1.08)	3.44 _a (1.26)

NOTE: Numbers are means on 7-point scales, with higher values indicating higher ratings of fairness, positive emotions, and trustworthiness; numbers within parentheses are standard deviations. Means with a different subscript differ significantly at $p < .05$.

In line with Hypothesis 1, the means reported in Table 1 show that perceptions of trustworthiness were indeed highest in the unbiased/high-accuracy condition and this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy effect was significant when the supervisor was not biased, $F(1, 102) = 13.68$, $p < .001$, $\eta^2 = .12$, but not when the supervisor was biased, $F(1, 102) = 1.24$, $p < .27$, $\eta^2 = .01$. Furthermore, the effect of procedural bias was significant within the accurate conditions, $F(1, 102) = 4.39$, $p < .05$, $\eta^2 = .04$, but not within the inaccurate conditions, $F(1, 102) < 1$, ns , $\eta^2 = .00$.

Procedural fairness judgments. A 2×2 ANOVA on the average procedural fairness score revealed, first, a significant main effect of procedural bias, $F(1, 100) = 4.04$, $p < .05$, $\eta^2 = .04$: Participants in the biased condition evaluated the experimenter as less fair than did those in the unbiased condition ($M_s = 3.71$ vs. 4.18 , $SD_s = 1.29$ and 1.26 , respectively). Also, a significant main effect for accuracy was found, $F(1, 100) = 14.25$, $p < .001$, $\eta^2 = .12$: An accurate supervisor was evaluated as fairer than an inaccurate supervisor ($M_s = 4.39$ vs. 3.51 , $SD_s = 1.34$ and 1.09 , respectively). Finally, a significant interaction effect emerged, $F(1, 100) = 4.98$, $p < .05$, $\eta^2 = .05$ (see Table 2).

In line with Hypothesis 1, the means reported in Table 2 show that perceptions of procedural fairness were indeed highest in the unbiased/high-accuracy condition and this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy effect was significant when the supervisor was not biased, $F(1, 102) = 17.49$, $p < .001$, $\eta^2 = .15$, but not when the supervisor was biased, $F(1, 102) < 1$, ns , $\eta^2 = .01$. Furthermore, the effect of procedural bias was significant within the accurate conditions, $F(1, 100) = 8.04$, $p < .01$, $\eta^2 = .07$,

but not within the inaccurate conditions, $F(1, 100) < 1$, ns , $\eta^2 = .00$.

Positive emotions. A 2×2 ANOVA on the average positive emotion score revealed, first, a marginal significant main effect of procedural bias, $F(1, 100) = 2.79$, $p < .10$, $\eta^2 = .02$: Participants in the unbiased condition experienced higher positive emotions than did those in the biased condition ($M_s = 4.34$ vs. 3.98 , $SD_s = 1.18$ and 1.13 , respectively). Also, a significant main effect of accuracy was found, $F(1, 100) = 4.46$, $p < .05$, $\eta^2 = .04$: Participants experienced higher positive emotions in the accurate condition than in the inaccurate condition ($M_s = 4.39$ vs. 3.51 , $SD_s = 1.17$ and 1.12 , respectively). Finally, a significant interaction effect emerged, $F(1, 100) = 6.07$, $p < .05$, $\eta^2 = .05$ (see Table 2).

In line with Hypothesis 1, the means reported in Table 2 show that the experience of positive emotions was indeed highest in the unbiased/high-accuracy condition and this cell was significantly different from the other cells. Furthermore, to test Hypothesis 2, planned comparisons were calculated. As expected, the accuracy effect was significant when the supervisor was not biased, $F(1, 102) = 10.38$, $p < .005$, $\eta^2 = .07$, but not when the supervisor was biased, $F(1, 102) < 1$, ns , $\eta^2 = .00$. Furthermore, the effect of procedural bias was significant within the accurate conditions, $F(1, 102) = 8.33$, $p = .005$, $\eta^2 = .07$, but not within the inaccurate conditions, $F(1, 100) < 1$, ns , $\eta^2 = .00$.

Mediational analysis. Again, to test whether perceptions of trustworthiness underlie the predicted interaction effects on procedural fairness judgments and positive emotions (Hypothesis 3), I conducted a series of regression analyses (Baron & Kenny, 1986). The same procedure as in Experiment 1 was followed.

Procedural fairness judgments. A first regression analysis on procedural fairness judgments revealed significant main effects of accuracy, $\beta = -.34$, $p < .001$, and bias, $\beta = .18$, $p = .05$, and a significant interaction effect, $\beta = -.87$, $p < .05$, as such paralleling the ANOVA results. A second regression analysis revealed that trustworthiness significantly influenced procedural fairness judgments, $\beta = .80$, $p < .001$. A third regression analysis on the trustworthiness score revealed a significant main effect of accuracy, $\beta = -.32$, $p = .001$, and a marginal significant interaction effect, $\beta = -.72$, $p < .08$, also paralleling the ANOVA results. Finally, a regression analysis including trustworthiness as covariate revealed that the interaction between accuracy and bias disappeared, $\beta = -.33$, $p < .20$. A calculation of the Sobel test showed that this reduction in beta weight was marginally significant, $z = -1.77$, $p < .08$.

Positive emotions. A first regression analysis on positive emotions revealed a significant main effect of accuracy, $\beta = -.19$, $p < .05$, a marginal significant effect of bias, $\beta =$

.15, $p = .10$, and a significant interaction effect, $\beta = -1.00$, $p < .05$, as such paralleling the ANOVA results. A second regression analysis revealed that trustworthiness significantly influenced positive emotions, $\beta = .60$, $p < .001$. Finally, a regression analysis including trustworthiness as covariate revealed that the significant interaction between accuracy and bias disappeared, $\beta = -.59$, $p < .09$. A calculation of the Sobel test showed that this reduction in beta weight was marginally significant, $z = -1.73$, $p < .09$.

GENERAL DISCUSSION

Taken together, the present findings are supportive of the predictions. Both studies showed that it is useful for justice studies to examine interactions between different procedural rules to unravel further why procedural justice should matter in influencing a range of reactions, including fairness perceptions, trust perceptions, and emotions. In addition, the analyses also provided insights in the underlying mechanisms of the interactive effect of accuracy and bias. In the following paragraphs, the most important implications will be discussed.

The main finding of the present research concerns the interaction between procedural bias and accuracy. Consistent across two studies, procedural bias and accuracy had stronger effects on a variety of human reactions in conjunction rather than on their own (Hypothesis 1). Furthermore, the findings of this interaction show that if people perceive the authority to be biased, procedural accuracy does not exert any influence whatsoever. In contrast, when the authority is perceived as unbiased, people attend to the accuracy of the procedure enacted (Hypothesis 2). These results are important for a variety of reasons. First, it is the first causal demonstration—at least, to my knowledge—of how key procedural rules combine in predicting procedural justice evaluations, perceptions of trustworthiness, and positive emotions. Second, it demonstrates how an initial procedure such as bias can direct people's attention to other procedural justice information. If people realize that the authority is biased, no more importance will be assigned to the preceding procedural justice information, whereas this will be the case when the authority is perceived as unbiased. Thus, the present research provides useful information concerning the combined effects of two important, but hardly examined, procedural components in relationship to judgments and emotional measures.

Another interesting finding was that both studies demonstrated that this interaction was mediated by perceptions of trustworthiness (Hypothesis 3). Indeed, both procedural justice perceptions and emotional reactions were explained, at least partly, in terms of trustworthiness. This observation aligns well with findings that trustworthiness may act as a substitute of procedural justice

(e.g., Van den Bos, Wilke, & Lind, 1998) and the observation that reactions toward violations of justice are strongly emotional (see Bies & Tripp, 1996). Moreover, these findings are in line with the assumption that people care about the benevolence of the authority and that they therefore assign much weight to how neutral the authority acts (Tyler & Lind, 1992). Or, in other words, Tyler and Degoe (1996) state, "trustworthiness is primarily determined by neutral and unbiased decision making" (p. 342).

As a matter of fact, the identification of this mediating variable is important for a variety of reasons. First, to date, only a few empirical studies have been able to demonstrate that perceptions of trustworthiness are in some way associated with how procedural justice operates (see, for an exception, Brockner, Siegel, Daly, Tyler, & Martin, 1997). More specifically, a recent meta-analysis by Cohen-Charash and Spector (2001) noted that "procedural justice means that the organization acts fairly as a rule and hence can be trusted. This prediction, however, is not supported by our findings" (pp. 306-307). Second, research on authorities and procedural justice has been criticized for providing little information about the possible mechanisms through which leader behavior and procedures influence subordinates (e.g., Cohen-Charash & Spector, 2001; Podsakoff, MacKenzie, Paine, & Bachrach, 2000). The finding that perceptions of trustworthiness mediated the interactive effect of bias and accuracy thus is a step forward in uncovering the process through which leader's procedures affect people's reactions.

It is also noteworthy that across two studies significant effects on emotional reactions were found. Including emotional measures to understand the psychology of procedural justice is important at least for two reasons. First, recently a strong plea has been made for justice researchers to leave their cognitive mode of thinking and to start including people's emotional experiences to explain people's reactions toward (in)justices more accurately (e.g., Bies & Tripp, 2002; Brief, 2001). Due to the fact that consensus now exists that the fairness of procedures is one of the major issues that people within groups and organizations are concerned about (Tyler & Smith, 1998)—significantly influencing a variety of reactions such as group identification, organizational commitment, cooperation, organizational citizenship behavior, and so forth—researchers interested in the psychology of procedural justice are particularly advised to pay attention to the role of emotions.

Second, and on a related note, although the role of emotions is very much present in social justice theories (e.g., equity and relative deprivation theory) (Adams, 1965), most procedural justice research has neglected this response variable (Mikula et al., 1998). This neglect

is worrying for the development of our justice theories because emotional reactions are generally considered to play an important role in translating rather objective instances such as procedures into its own subjective judgments and perceptions or, in other words, emotions may be helpful to more fully understand why justice is considered to be in the eye of the beholder. Furthermore, the limited number of justice studies that have included emotions focused mainly on negative emotions, whereas as we argued in our introduction, research on the experience of positive emotions is badly needed (cf. Watson et al., 1988). Acknowledging the finding from relationship research that positive affect is experienced more when relationships are enjoyable and reliable (e.g., Baumeister & Leary, 1995) also adds to the present claim that positive emotions need to be included to study the positive effects of using fair procedures.

Furthermore, the present research also yields additional evidence for the proposition that bias and accuracy are important instances of procedural rules (e.g., Leventhal, 1980). Leventhal's six justice criteria were based on a theoretical analysis of the literature and as such were in need of empirical validation. To date, however, research efforts in this direction have been very scarce. Indeed, in their meta-analysis, Cohen-Charash and Spector (2001) pointed out that "although we have enough data on some aspects of organizational practices (e.g., voice), we do not have enough data on other aspects of organizational practices, such as correctability and representativeness" (p. 308). In addition, I would like to emphasize again that this type of research also should be taken one step further, that is, the possible interactions between these procedural rules should be looked at more closely because they may teach us which procedures are most important and under which circumstances they may be most effective.

Another issue that deserves attention is that in the present research, bias information was presented before the accuracy information. In doing this, I assumed that in many situations people already have some idea about whether an authority is biased before they actually encounter real procedural treatment such as (in)accurate evaluations (e.g., Kurlan & Pelled, 2000). Although this may be true from a practical point of view, one still needs to wonder how the results might have looked if participants would have received the accuracy information first. Indeed, research by Van den Bos et al. (1997) shows that people frequently base their fairness judgments on the information that they receive first (see fairness heuristic theory) (Lind, 2001). More specific, their research showed that if people received outcome information before procedural information was given, their judgments were most influenced by outcomes rather than procedures, whereas the opposite was true when

procedural information was given before outcome information. Given this type of research, future research may examine whether people would assign weight to bias information when they are treated in an accurate or inaccurate manner first.

Before closing, some limitations and strengths need to be mentioned. A potential limitation is that I did not address other frequently used dependent measures in justice research. For example, a vast amount of research on the relational model of authority included state self-esteem as a primary dependent measure (e.g., Tyler, Degoe, & Smith, 1996; Tyler & Smith, 1999). In addition, research on prejudice or biased attitudes toward different group members also has frequently used self-esteem as an important indicator of how people feel treated (e.g., Crocker & Major, 1989; Major, Quinton, & McCoy, 2002). Therefore, future research examining the procedural rule of bias may include self-esteem as a measure. Another potential limitation is that the present research only addressed the psychology of procedures and did not include the effects of distributive justice. Indeed, manipulations of distributive outcomes may interact with manipulations of procedures in determining people's reactions. For example, people might still experience positive emotions if they obtained positive outcomes such as a job or promotion even though their supervisor was known to be biased and used less than optimally accurate procedures. Future research is needed to test these potential interesting interactions. An important strength, however, is that the present research is the first—to my knowledge—to experimentally examine how different procedural rules interact in determining people's reactions. Managers and authorities use a variety of procedures; therefore, insights are required to understand when one procedure may dominate the other and if combining several procedures may reveal stronger effects. It is my hope that future justice research will direct more effort in this much-needed direction of research.

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